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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)



Applicant's or agent's file reference C01.WO.1.06		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA416)	
International application No. PCT/IB 03/01205	International filing date (day/month/year) 02.04.2003	Priority date (day/month/year) 03.04.2002	
International Patent Classification (IPC) or both national classification and IPC B65B35/16			
Applicant CARLE & MONTANARI S.P.A.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 03.11.2003	Date of completion of this report 21.05.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Vigilante, M Telephone No. +31 70 340-2902 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**International application No. **PCT/IB 03/01205****I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

- 1, 3-6 as originally filed
2, 2bis received on 05.04.2004 with letter of 01.04.2004

Claims, Numbers

- 1-17 received on 05.04.2004 with letter of 01.04.2004

Drawings, Sheets

- 1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	
Inventive step (IS)	Yes: Claims	1-17
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

2. Citations and explanations

see separate sheet

INTERNATIONAL PRELIMINARY

International application No. PCT/IB03/01205

EXAMINATION REPORT - SEPARATE SHEET

Re Item V**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Document EP-A-0872436 discloses a method for separating small objects, especially candies, and delivering them to a packaging machine by means of a first band conveyor and a directly following second band conveyor, which is driven at a slighter speed than the first conveyor. The small objects are furthered by the conveyors up to a pick-up position where they are seized by grippers of a revolving accelerator wheel, which are swung in such way that a tangential speed of the grippers at the pick-up position is adjusted with a conveyor speed of the objects.

The problem to be solved by the invention is how to delicately handle and/or to move the chocolate products, avoiding breaks or damages thereof operating at high speeds.

The combination of belt means, provided with holding means for stopping in position chocolate products, with a positioning wheel, for transferring the product to the wrapping machine, whose rotating axis is vertical with respect to the direction of the belt means and whose pliers means are fixed thereto with an orientation almost tangential to a circumference inscribed in the positioning wheel.

The subject-matter of claim 1 is therefore new and inventive (Article 33(2),33(3) PCT).

Claims 2-17 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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products tend to slip on the storage belt, till they miss their correct positioning in the picking or transfer zone within the machine cycle, in such a way causing idle cycles with consequent reduction of machine production.

< p. 2 bis > →

5 DISCLOSURE OF THE INVENTION

The main object of the present invention is to propose a feeding device, which can operate at high speeds, guaranteeing a regular and reliable operation, without blockages, jams, and product feeding idle cycle, maintaining a product feeding synchronized with the machine.

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Other object of the present invention is to propose a device, which allows delicately handling and/or moving the product, avoiding breaks or damages thereof.

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Further object is to propose a device, which is accurate and reliable and guarantees a perfect phase synchronization with the downstream wrapping machine.

The above-mentioned objects are achieved according to the content the claim content.

BRIEF DESCRIPTION OF THE DRAWINGS

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The characteristics of the present invention are underlined in the following with particular reference to the attached drawings, in which:

- figure 1 show a partial section front view of the feeding device of the present invention;
- figure 2 shows a plan view of the figure 2 device;
- 25 - figure 3 shows a partial section view according to plain III-III of figure 1;
- figure 4 shows a front view of conveyer means of the figure 1 device;
- figure 5 shows a section view according to plain V - V of figure 4.

BEST MODE OF CARRYING OUT THE INVENTION

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With reference to figures 1 to 5, numeral 1 indicates the feeding device of product 100 substantially constituted by belt means first 13, second 14 and third 16 and by a positioning wheel 9.

- 35 The first means belt 13 has a continuous advance motion and supports and moves a plurality of

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2bis

Document EP-A-0872436 discloses a method for separating small objects, especially candies, and delivering them to a packaging machine by means of a first band conveyor and a directly following second band conveyor, which is driven at a slighter speed than the first conveyor. The small objects are furthered by the conveyors up to a pick-up position where they are seized by grippers of a revolving accelerator wheel, which are swung in such way that a tangential speed of the grippers at the pick-up position is adjusted with a conveyor speed of the objects.

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CLAIMS

1) Feeding device of chocolates and similar products (100) for a wrapping machine
~~characterized in that includes~~ including:

- 5 - a first belt means (13), which has a continuous advance motion, supports and moves a plurality of products (100), aligned and arranged in a single line at mutual contact;
- a second belt means (14), aligned downstream the first belt means (13), having an alternate advance motion and associated to holding means (15) of the product (100);
- < p. 7 bis > → - a positioning wheel (9) ~~rotating~~ facing the second belt means (14) immediately
- 10 downstream the holding means (15) and having angularly equidistant a plurality of pliers means (11) for gripping the product (100);
- the second belt means (14) moves the products (100), reciprocally spaced, from a picking condition (A), in which the second belt means (14) receives the product (100) from the first belt means (13), through moving conditions (M), in which the holding means (15) keep
- 15 each product (100) fixed to the second belt means (14), to a transfer condition (T), in which the second belt means (14) is motionless and the product (100), not constrained thereto anymore, is grasped by a pliers means (11) of the positioning wheel (9), which moves the product (100) with circular motion, from the transfer condition (T) to a release condition (R) in which the wheel (9) is motionless and the pliers means (11) is opened for transferring
- 20 the product (100) to the wrapping machine.

2) Device according to claim 1 characterized in that includes a third belt means (16) aligned upstream the first belt means (13), having a continuous advance motion.

25 3) Device according to claim 2 characterized in that the first belt means (13) has a translation speed lower than the speed of third belt means (16) and higher than the average translation speed of second belt means (14).

30 4) Device according to claim 1 characterized in that the holding means (15) includes at least an air suction means (17) connected through duct means (19) to at least an opening (18) of second belt means (14), in order to hold by suction each product (100) supported by the second belt means (14).

35 5) Device according to claim 4 characterized in that the suction means (17) consists of a vacuum pump or a suction fan.

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said device (1) being characterized in that comprises a positioning wheel (9) which rotates on a vertical axis and includes at least four pliers means (11), mutually positioned at 90° and fixed to the wheel (9) with an orientation almost tangential to a circumference inscribed in the positioning wheel (9); the

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6) Device according to claim 4 characterized in that the opening (18) includes a plurality of through holes carried out on the second belt means (14).

7) Device according to claim 4 characterized in that the second belt means (14) consists of a couple of conveyor belts (22) parallel and transversally spaced apart by at least the opening (18), shaped as longitudinal slot.

8) Device according to claim 4 characterized in that the duct means (19) has an elongated shape and includes a suction mouth (23) in flow communication with at least the opening (18).

9) Device according to claim 8 characterized in that the duct means (19) include at least an inner duct having a divergent shape, starting from the suction mouth (23) up to the connection with the suction means (17).

10) Device according to claim 1 characterized in that includes at least sensor means first (20) and second (25), of optical or inductive or capacitive type, fit for sensing the presence of products (100) respectively in correspondence of the first belt means (13) and of the second belt means (14).

11) Device according to claim 1 characterized in that the second belt means (14) is rotated by an electric motor (21) of brushless type, controlled in position, speed and acceleration.

12) Device according to claim 1 and 2 characterized in that that the belt means, first (13) and third (16), are rotated by at least a respective ~~ratio motor (24)~~ electrically-operated geared motor (24).

~~13) Device according to claim 1 characterized in that the positioning wheel (9) includes at least four pliers means (11) mutually positioned at 90° and fixed to the wheel (9) with an orientation almost tangential to a circumference inscribed in the positioning wheel (9).~~

13) Device according to claim 1 characterized in that the positioning wheel (9) includes a first column (61) fixed to the device (1) and rotatably supporting a second column (62) and a third column (63), coaxial thereto and independently rotating on a vertical axis.

14) Device according to claims 13 ~~and 14~~ characterized in that each pliers means (11) is fixed,

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through a support plate (68), to the third column (63) and includes a couple of mobile tines (12), symmetrically rotating between a closing condition (C), in which said tines (12) are at the minimum mutual distance for gripping a product (100), to an opening condition (D), in which they are at the maximum mutual distance for releasing said product (100).

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~~16~~ Device according to claim ~~15~~ ¹⁴ characterized in that each pliers means (11) includes transmission means (65) connected to control means (64) of the second column (62), these last ones being fit to open and close the mobile tines (12) of each pliers means (11), through the rotation of said second column (62).

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~~17~~ Device according to claim ~~16~~ ¹⁵ characterized in that each transmission means (65) includes at least a pivot (67), slidably supported by third column (63), connected to the mobile tines (12) of the respective pliers means (11) through a pinion-rack connection, and slidably engaged by sliding rolls (66) to a cam profile of the control means (64).

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~~18~~ Device according to any of the preceding claims characterized in that is totally controlled by electronic calculation and control means fit to control the phase relations at least among the belt means (13, 14, 16), the positioning wheel (9) and the pliers means (11).

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